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REMARKS

The application has been reviewed in light of the final Office Action dated June 15, 2004. Claims 7-17 were pending in the application, with claims 7-11 and 13-15 having been withdrawn by the Patent Office from further consideration. Claims 1-6 were previously canceled, without prejudice. By this Amendment, Applicant has amended claims 12, 16 and 17 to clarify the claimed invention, and added new dependent claims 18-21. Support for the clarifying amendment of the claims, and/or for the new claims, can be found in the application at, for example, page 1, lines 3-9, page 4, lines 4-10, page 5, lines 18-25, page 6, lines 3-24 and page 14, lines 7-14.

Claim 17 was rejected under 35 U.S.C. §112, first paragraph, as purportedly failing to comply with the written description requirement.

By this Amendment, Applicant has amended claim 17 to clarify the claimed invention, including removing the terms in the claim which the Office Action indicates are objectionable.

Withdrawal of the rejection under 35 U.S.C. §112 is requested.

Claims 12, 16 and 17 were rejected under 35 U.S.C. §102(b) as purportedly anticipated by U.S. Patent 4,920,007 to Sawamura et al. Claims 12, 16 and 17 were rejected under 35 U.S.C. §102(b) as purportedly anticipated by U.S. Patent 4,902,584 to Uchiyama et al.

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Applicant has carefully considered the Examiner's comments and the cited art, and respectfully submits that independent claims 12 and 16 are patentable over the cited art, for at least the following reasons.

This application is directed to the object of improving the overwrite characteristics of a phase variation type data recording medium. In order to achieve this object, the claimed invention of this application provides a heat-resistant protective layer comprising a mixture of silicon oxide and silicon nitride, to allow data to be stably recorded to and erased from the phase variation type data recording medium a number of times repeatedly. The claimed invention of this application addresses a problem ascribable to a recording mechanism unique to a phase variation type recording medium which is simply not mentioned in the cited references.

Generally, data is recorded in a phase variation type recording layer of the recording medium by heating the recording layer to above its melting point and then cooling it sufficiently rapidly to form amorphous portions in the recording layer. Other than in the recorded portions, the recording layer is protected from the effects of heat in order to preserve the boundary between the recorded portions and unrecorded portions and avoid crystallization and erasure of the recorded portions. The protection layer has high thermal conductivity and channels away from the recording layer the heat released by the recorded

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portions.

As pointed out in the application, it is important for the protection layer to have a thermal conductivity which matches the light-to-heat conversion efficiency of the recording layer. Thus, a protection layer suitable for a recording layer of one particular constitution is not necessarily suitable for protection layers of other constitutions.

Each of independent claims 12 and 16 has been amended to clarify that the claim is directed to a protection layer for a phase variation type data recording medium.

Sawamura, as understood by Applicant, is directed to a magneto-optical recording medium. Sawamura discloses a magneto-optical recording medium including a GdTbFe (or GdTbFeCo) magnetic recording layer and a protective layer for improving the durability of the magnetic recording layer. According to Sawamura, it is desirable to provide a protective layer comprising a nitride-oxide mixture which is selected to obtain a desired refractive index and an improved writing and readout efficiencies, suitable for the magnetic recording layer.

Uchiyama, as understood by Applicant, is directed to magneto-optical recording media. Uchiyama discloses a magneto-optical recording medium comprising a substrate, a magnetic recording layer and a protective layer (as well as other layers).

According to Uchiyama, the magnetic recording layer is formed from alloys containing rare earth elements and transition metals,

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such as TbFeCo, GdFeCo, GdTbFeCo, etc.

Neither Sawamura nor Uchiyama is directed to the object of improving the overwrite characteristics of a phase variation type data recording medium. Sawamura and Uchiyama relate to magnetooptical recording media including a magnetooptical recording layer, and are directed to the object of enhancing (i) the corrosion resistance of a recording layer and (ii) adhesion of the recording layer to a substrate.

The claimed invention of this application provides for control of the thermal conductivity of the heat-resistant protection layer and thereby enables control of the heating and cooling rates of the recording medium. In contrast, Sawamura and Uchiyama contemplate balancing (a) prevention of oxidation of a recording medium with silicon nitride and (b) enhancement thereof to a substrate with silicon substrate.

Applicants do not find a disclosure or suggestion in Sawamura of a phase variation type data recording medium including a phase variation type recording layer substantially constituted by Ag, In, Sb and Te. Sawamura simply does not contemplate a protection layer for a phase variation type data recording medium including a phase variation type recording layer substantially constituted by Ag, In, Sb and Te, as provided by the claimed invention of the present application.

Uchiyama, like Sawamura, does not disclose or suggest a phase variation type data recording medium including a recording

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layer substantially constituted by Ag, In, Sb and Te. Sawamura also does not contemplate a protection layer for a phase variation type data recording medium including a recording layer substantially constituted by Ag, In, Sb and Te, as provided by the claimed invention of the present application.

While the present application is directed to improvements to overwrite characteristics in a phase variation type data recording medium which uses recording based on melting and rapid cooling of the recording medium, Uchiyama and Sawamura involve magnetoptical media wherein recording is performed via the Kerr effect or Faraday effect.

Since the cited art does not disclose or suggest the claimed invention (i.e. a protection layer for a phase variation type data recording medium including a phase variation type recording layer substantially constituted by Ag, In, Sb and Te), the cited art does not render the claimed invention unpatentable.

If a petition for an extension of time is required to make this response timely, this paper should be considered to be such a petition. The Office is hereby authorized to charge any fees that are required in connection with this amendment and to credit any overpayment to our Deposit Account No. 03-3125.


If a telephone interview could advance the prosecution of this application, the Examiner is respectfully requested to call the undersigned attorney.

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Allowance of this application is respectfully requested.

Respectfully submitted,


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